

ABSTRACT OF THE DISCLOSURE

The present invention provides a method of measuring the thickness of a thin film or thin layer by a spectroscopic measurement, which is applicable to the measurement of a multiple layered film whose layers have different refractive indices. According to the method, an interference light from the film is measured to create a measured spectrum. The waveform of the measured spectrum can be approximately represented by a linear sum of base spectra. Accordingly, various constructed spectra are created using base spectra each having a cycle interval as a parameter. Then, the constructed spectrum that minimizes the square error against the measured spectrum is identified. The least square error is calculated for each of predetermined cycle intervals. A graph is drawn to represent the relation between the least square error and the cycle interval. The correspondence between the layers and the plural minimum points of the least square error appearing on the graph is determined. The thickness of each layer is calculated from the cycle interval at which the minimum point appears and the refractive index of the layer.